

REPORT OF THE FINAL PANEL
BOARD OF REGENTS SUPPORT FUND
INDUSTRIAL TIES RESEARCH SUBPROGRAM
FY 2006-07

BACKGROUND INFORMATION

Thirty-nine research proposals requesting a total of \$3,189,564 for the first year of work were submitted for funding consideration during fiscal year (FY) 2006-07 in the Industrial Ties Research Subprogram (ITRS) component of the Board of Regents Support Fund (BORSF). Of the thirty-nine proposals submitted one contained information of a confidential or proprietary nature. A three-phase evaluation process conducted exclusively by out-of-state experts was used to review these proposals.

REVIEW PROCESS

Phase I: In Depth Mail Review

The thirty-nine proposals were reviewed for scientific and technical merit, as well as for their potential to contribute to Louisiana's economic development and diversification, by twelve out-of-state experts. The experts included two reviewers in each of the following six subject areas: agriculture, aquaculture, and animal science; biotechnology and health care; chemical materials and petroleum engineering; computer and information sciences; mechanical and materials engineering; and environmental science & technology and urban development. Each subject area mail reviewer independently evaluated and prepared an in-depth evaluation form for each assigned proposal in the subject area.

Phase II: Reviewer Consensus Evaluation

After each reviewer independently reviewed each assigned proposal, members of the various subject area groups communicated with each other to arrive at a consensus ranking of proposals within each subject area. Proposals were placed in one of three categories:

1. Priority One: Highly Meritorious Proposals Recommended for Funding;
2. Priority Two: Meritorious Proposals of a Lower Priority; and
3. Priority Three: Do Not Fund as Submitted.

Copies of all evaluation forms from out-of-state experts who participated in Phases I and II of the review process were forwarded to each member of the final panel, along with copies of all proposals submitted. Each member of the final panel read and studied each proposal and each evaluation prior to the final panel's meeting.

Phase III: Final Panel Review

Three out-of-state experts participated in Phase III of the review process and served on the final panel. The panel convened in Baton Rouge on February 19-20, 2007, to discuss Phase I and II subject area evaluations,

to prioritize awards, and to develop funding recommendations. The final panel considered each of the thirty-nine proposals extensively and based its recommendations on the following criteria:

- A. Scientific and technical merit;
- B. Potential to enhance economic development and/or diversification in Louisiana;
- C. Evidence of private sector involvement; and
- D. Evidence of innovation and ability to advance Louisiana's scientific, engineering, and/or technological bases.

The panel was informed that a maximum of \$558,698 would be available in first-year funds for new research projects in the ITRS in FY 2006-07, and that money to continue the second or third years of multi-year projects recommended for funding would be budgeted separately from this amount. As a result of the final panel's deliberations, nine proposals and two alternates (in the event that one or more of the higher-ranked applicants declines an award) were recommended for funding. These nine Priority One proposals and two alternates are listed in **Appendix A**, immediately following the narrative section of this report. The final rankings and selections for awards were based upon individual ratings of the external reviewers (Phase I), the consensus rankings of the subject area reviewer groups (Phase II), and the final panel's (Phase III) consensus evaluation, taking into account the projects' economic potential.

Two other highly meritorious proposals considered at the final panel meeting but, for a variety of reasons, not recommended for funding, are listed in Appendix B. (See Appendix B, which lists proposals placed in the Priority One category by the subject area panels that were not recommended for funding by the Final Panel). Each applicant whose proposal is listed in Appendix B should closely review the reviewers' comments. The final panel believes that these investigators should be notified of their good work and encouraged to revise and resubmit their proposals in the future, with the prospect that improvements in proposal content could ultimately lead to an award. These proposals, listed in numerical order in Appendix B, should not be funded this year. The Board of Regents Support Fund would be better served by diverting any available funds not awarded to and/or unclaimed by Priority One projects to other R&D program component(s).

Six other proposals were considered meritorious by both the Subject Area Reviewers and the Final Panel, but insufficiently developed in one or more areas to be worthy of funding at this time (Priority Two).

Each of the twenty remaining proposals, although meritorious in some respects, was deemed inconsistent with the goals and purposes of the ITRS and/or seriously deficient in one or more areas (Priority Three or Ineligible). The principal investigators who submitted these proposals are encouraged to submit them to other, more appropriate funding programs or to make significant revisions before considering resubmission to the ITRS.

The panel recommends that the Board of Regents commit funding for each new proposal for a maximum of three years, with renewal in the second and third years made contingent upon satisfactory progress as well as reconfirmation of continued external matching funding. External stipulations and institutional matching requirements applicable in general to the nine Priority One proposals and two alternates are contained in **Appendix C (C.1)**. The specific levels of outside funding required and detailed stipulations or conditions applicable to each proposal are included in the discussion of the nine Priority One proposals and two alternates listed in **Appendix C (C.2)**. Summary statements have been provided in **Appendix C** for each Priority One **(C.2)**, meritorious ITRS proposals ranked Priority One by the subject area panels and considered by the final panel but not recommended for funding **(C.3)**, and Priority Two **(C.4)** proposal. These summaries include the following information for each proposal:

1. Proposal number and title;
2. Strengths and weaknesses of the proposal;
3. Potential economic impact on Louisiana; and
4. Recommended BORSF funding level and funding stipulations, as applicable. (*Note:* This information is provided only for the nine proposals and two alternates recommended for funding and included in Priority One).

A general statement on proposals ranked Priority III by the final panel is included in **Appendix C (C.5)**.

The individuals who participated in Phases I and II of the review process are listed in **Appendix D**.

In depth mail reviews will be provided as feedback to all applicants in July 2007.

FINAL PANEL RECOMMENDATIONS

To Phase I and Phase II Subject Area Reviewers:

Reviewers should be commended for their performance in accordance with the guidelines set forth in the FY 2006-07 Request for Proposals.

To the Applicants:

Applicants should be commended for their efforts to obtain industrial support and for proposing research in areas with high economic potential. Several of the proposals were not supported by strong research plans which included a testable hypothesis. Improving the quality of this section of the ITRS proposals would help ensure that this program contributes to strengthening the academic mission of the supporting university or institution.

Each proposal submitted should include the following information or plan of action:

1. A one-page summary describing the research in layman's language and assessing its technology transfer potential.
2. An assessment of the supportive science and interdisciplinary expertise needed to enhance the potential success of the research, including joint research activities with other researchers or research groups at the same or other institutions.
3. A description of industrial participation representing a true collaboration; including past, scheduled, and potential contacts and visits to and from industry, as well as scheduled or potential contributions of funds, equipment, and services by industry.
4. Identification of an existing industry that will utilize proposal results, or of a new industry to be created through the proposed research.

To the Board of Regents: General Recommendations

Over the years there has been a substantial improvement in obtaining Industry and non-academic support as well as development of solid research plans. It is important to encourage these improvements through the following (5) processes:

1. Continue to provide workshops and seminars for faculty on developing proposal preparation and requirements; development of consortia and cooperative research centers; patent and licensing procedures; and technology transfer to commerce.
2. Ensure that funded projects obtain the required industrial matching support. Principal investigators should be required to document acquisition of the recommended level and types of industrial matching support by June 30, 2007, for the required first-year matching commitment; by March 31, 2008, for the required second-year match; and by March 31, 2009, for the required third-year matching commitment. The staff of the Office of Sponsored Programs should further promote recognition around the state that the ITRS not only encourages but requires industrial and/or federal governmental support as a condition for funding. Significant external funding is often necessary to purchase equipment and to fund salaries.
3. Notify applicants that literature reviews, the development of databases, and the drafting of research protocols should take place prior to submission of a proposal. These activities should not be funded by the ITRS of the Board of Regents Support Fund.
4. Notify applicants that the industrial support obtained should be incorporated in the budgets of proposals under the appropriate line items.
5. Where appropriate, request applicants to include more detailed information regarding current and potential intellectual property rights with their proposals.

APPENDIX A

ITRS PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
(PRIORITY ONE)

Rank	Proposal No.	Institution	Recommended BORSF 1 st Year Funds	Recommended BORSF 2 nd Year Funds	Recommended BORSF 3 rd Year Funds
1	036B	UNO	\$ 75,383	\$ 75,383	\$ 75,383
1	031B	ULL	68,544	75,669	68,544
1	001B	LSU-AG	70,371	44,765	43,239
1	038B	UNO	52,250	52,250	52,250
1	008B	LSU-BR	54,670	49,671	47,415
1	011B	LSU-BR	54,364	51,068	51,037
1	019B	TULANE	47,500	52,250	52,250
1	028B	ULL	64,600	65,550	66,500
1	012B	LSU-BR	71,016	66,500	57,000
TOTAL			\$ 558,698	\$ 533,106	\$ 513,618
ALTERNATES					
1	018B	TULANE	40,000	40,000	40,000
2	039B	UNO	59,539	57,829	55,891

APPENDIX B

MERITORIOUS ITRS PROPOSALS RANKED PRIORITY ONE BY THE SUBJECT AREA PANELS
AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING (2)020B
025B

Note: These proposals are not listed in rank order of merit. The Panel's comments on these proposals are provided in **Appendix C.3**. Subject Area panel reviews for each proposal will also be provided to the applicants in July 2007.

**APPENDIX C
MERITORIOUS ITRS PROPOSALS OF LOWER PRIORITIES**

PRIORITY TWO*

003B	024B
016B	027B
023B	035B

PRIORITY THREE*

002B	017B
004B	021B
005B	022B
006B	026B
007B	029B
009B	030B
010B	032B
013B	033B
014B	034B
015B	037B

Note: *These proposals are not listed in rank order of merit and are not recommended for funding as currently submitted. The Panel's comments on the proposals ranked Priority Two are provided in **Appendix C.4**. Subject Area panel reviews for each proposal will be provided to the applicants in July 2007.

APPENDIX C.1

GENERAL EXTERNAL AND INSTITUTIONAL MATCHING REQUIREMENT STIPULATIONS FOR ITRS AWARD RECIPIENTS

External (i.e., industrial or approved governmental) and institutional funding commitments may not be reduced below levels pledged in the original proposal unless reductions are specifically permitted in the funding stipulations for a grant. In some cases, additional external funding over and above that pledged in the proposal (see Appendix C.2) may be required. The types and amounts of additional required funding are specified in the funding stipulations for the affected awards. **Unless otherwise indicated, all awards are contingent upon receipt by the Board no later than June 30, 2007, of updated documentation from the provider(s) of the external match reconfirming provision of the match pledged in the proposal. Furthermore, second-year funding will be contingent upon receipt by the Board no later than March 31, 2008, of updated documentation from the provider(s) of the external match reconfirming provision of the required second-year external match. Third-year funding will be contingent upon receipt by the Board no later than March 31, 2009, of updated documentation from the provider(s) of the external match reconfirming provision of the required third-year external match. Letters (originals) from the private sector or government agency providing the required match must be provided to the Board on company or agency letterhead and signed by authorized representatives of the companies or agencies by these same dates.**

Although budget requests from the Board of Regents Support Fund have been reduced significantly in some cases, no budget has been reduced to a degree that would impair execution of the proposed research and accomplishment of the project goals. **Therefore, funding for each recommended Priority One project is made contingent upon full and complete execution of the work plan delineated in the proposal.**

APPENDIX C.2

COMMENTS AND FUNDING STIPULATIONS FOR
 PROPOSALS HIGHLY RECOMMENDED FOR FUNDING
 (PRIORITY ONE)

Proposal 036B

Rank: 1

TITLE: *Preserving Half-Metallicity on the Surface of Fe₃O₄ for Spintronic Applications*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Jinke Tang, Ph.D.

COMMENTS: Half-metals have received considerable attention because of their unique magnetic and transport properties: conductors for half of the electrons and insulator/semiconductors for the other half of the electrons, depending on their spin orientation. Such properties are key elements in next generation spintronic technologies. This opens the possibilities for a range of new spin-based applications and quantum devices, for example spin injection and magnetic random access memories (MRAM). In order to fully utilize half-metallicity in devices, electrons need to preserve a high degree of spin polarization when crossing the interface between *Fe₃O₄* and another material. UNO, in collaboration with Tulane University and industrial partner Sharp Laboratory of America, Inc., will focus on the investigation of the surface of *Fe₃O₄* prepared by various techniques that best preserve the 3:4 stiochiometry of magnetite. More specifically, to systematically screen potential coating materials which could allow *Fe₃O₄* to exhibit higher spin polarization at room temperature than previously tested polystyrene by investigating the tunneling magnetoresistance (TMR) of intergranular *Fe₃O₄*. The success of the proposed project could have a significant impact on memory and data storage technology and industries, thereby advancing the goals set by the Louisiana Department of Economic Development (LDED) to diversify the state’s economic base by advancing high impact, innovative technological opportunities in manufacturing and manufacturing sectors.

The principal investigator has a good publication and, grant generation record. This project has generated good support from Sharp Laboratories of \$90,000 in cash over a (3) year period. A revised budget should be submitted that limits BoRSF travel support to \$1,000/year for both UNO and Tulane University. Additionally, Tulane University must maintain graduate assistant support at the level indicated in the original proposal for each year of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$75,383	\$30,000 as specified in the proposal
2 nd Year	\$75,383	\$30,000 as specified in the proposal
3 rd Year	\$75,383	\$30,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 031B**Rank: 1**

TITLE: *Development of Novel Feedstocks for Supporting Lipid Based Chemical Production in Louisiana*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Mark E. Zappi, Ph.D.; Rakesh Bajpai, Ph.D.

COMMENTS: Currently, soybeans represent the bulk of lipids used for the commercial production of industrial products within the U.S. Unfortunately, for many chemicals that may be produced from Soya-based lipids, the actual cost of the raw Soya oil represents well over 70% of production costs, making securing cheap and consistent sources of lipids a key concern for potential investors. Potential commercial uses of lipids include production of biodiesel, biopolymers (plastics, paints, etc.), nutraceuticals and “green” lubrication oils. This project proposes to develop three novel candidate lipid sources that are abundantly available in Louisiana and yet are not currently used for biodiesel production. Two of these sources are associated with established Louisiana industries (food processing and paper production), both of which produce vast amounts of waste lipids that currently present a disposal issue. The third source is the culturing of algae for production of chemicals (in this case lipids).

The proposed work plan is well documented but considered very academic. The principal investigators have modest publication and grant histories. They have solicited in-kind support from Boise-Cascade, L.L.C., \$10,000/year; Sharp Engineering, Inc., \$5,000/year; EnerGenetics International, Inc., \$10,000/year; Farm Pride Processors, \$20,000; and Mississippi Agricultural Products, L.L.C., \$15,000 for each year of the project. The principal investigators are required to maintain support for (2) graduate research assistants at the levels proposed in the original budget in all three years of the project and BoRSF travel support should be limited to \$1,000/year. Additionally, an updated letter of support from Farm Pride Processors must be provided on company letterhead.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$68,544	\$60,000 as specified in the proposal
2 nd Year	\$75,669	\$60,000 as specified in the proposal
3 rd Year	\$68,544	\$60,000 as specified in the proposal

Appendix C.2 (continued)

Proposal: 001B**Rank: 1**

TITLE: *Advanced Microwave Technology for Biodiesel Production from Soybeans and Rice Bran*

INSTITUTION: Louisiana State University Agricultural Center

PRINCIPAL INVESTIGATORS: Dorin Bolder, Ph.D.; Cristina M. Sabliov, Ph.D.;
Marybeth Lima, Ph.D.; Chandra S. Theegala, Ph.D.

COMMENTS: Recent upward trends in fossil fuel prices make biodiesel produced from vegetable oil feedstock a viable, renewable, alternative energy source with added environmental benefits of reducing overall CO₂ emissions. Notwithstanding feedstock prices and competition from petroleum diesel, a major component of the biodiesel price is production cost which is higher than petroleum-based diesel. A critical need exists to develop cost-saving processing technologies to assist biodiesel producers in reducing energy consumption and increasing yields. The overall goal of this research project is to develop a new technology for biodiesel production that is more cost-efficient than traditional methods.

The classification of this proposal as confidential was not justified since the technology has already been patented independent of this proposal. The overall publication and grant records of the principal investigators are not consistent, and are considered modest at best. The industrial partner Industrial Microwave Systems, Inc., a subsidiary of Laitram, L.L.C., in Harahan, LA supports this project for 3 years with a \$20,000 in-cash and \$15,000 in-kind contribution. The principal investigator must list and justify supplies requested for the project and limit BoRSF travel support to \$2,000 for each year of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments as stated in the proposal/specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal/specified by the consultants and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$70,371	\$15,000 as specified in the proposal
2 nd Year	\$44,765	\$10,000 as specified in the proposal
3 rd Year	\$43,239	\$10,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 038B**Rank: 1**

TITLE: *Development of the High-Pressure, High-Volume TurboPiston Pump*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATORS: Ting Wang, Ph.D.

COMMENTS: The destruction caused by Hurricane Katrina has brought attention to the constraints of the capability of existing pumps—high pressure pumps deliver small flow rates while high-flow pumps deliver low pressure head. Due to these limitations, canals were implemented in Greater New Orleans to drain large volumes of flood water several miles from the center of the city to Lake Pontchartrain. The breach of the levees along these canals prompted the need to look into alternative means of resolving future flood problems. UNO, in collaboration with Louisiana Pumps Inc., located in New Orleans, LA seeks to develop the design technology of a TurboPiston Pump(TPP) which incorporates the merits of centrifugal, axial, and positive displacement pumps to deliver large flow rates at very high pressure of up to 1000 psia with a single stage. More specifically, this research will simultaneously develop a 3-D computational model to simulate the flow field and develop a series of two plastic models. This will allow visualization and measurement of flow patterns, calibration of computational models with experimental data, and demonstration of the technology.

The principal investigator has a modest publication record and is highly dependent on state funds for support of his research program. The request for BoRSF equipment support appears excessive and should be funded more by the industrial partner. Therefore, as condition of funding, BoRSF equipment support should be limited to \$11,000 for year (1) and (2) and \$7,000 for year (3). The principal investigator is required to maintain support for (1) graduate research assistant at the levels proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments as stated in the proposal/specified by the consultants should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal/specified by the consultants and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$52,250	\$34,240 as specified in the proposal
2 nd Year	\$52,250	\$34,240 as specified in the proposal
3 rd Year	\$52,250	\$34,240 as specified in the proposal

Appendix C.2 (continued)

Proposal 008B**Rank: 1**TITLE: *Production of Ceramic Materials from Agricultural Waste*

INSTITUTION: Louisiana State University – Baton Rouge

PRINCIPAL INVESTIGATOR: Shengmin Guo, Ph.D.; Dongmei Cao; Ph.D.

COMMENTS: Louisiana rice and sugarcane production are ranked 2nd in the nation. Rice husks and sugarcane leaves are readily available in large quantities and underutilized. Based on a 20% weight percentage figure, the global annual production of rice husk is around 120 million tones. In the U.S. mills are typically large, thus disposal of the husk is a big problem. Burning in open piles is not acceptable on environmental grounds, and the majority of husk is currently going into landfill. The cost of landfill erodes the profit of the farmer and the milling companies. LSU, with the support of Louisiana start-up high tech company Ceramics from Agricultural Waste-Ceramics L.L.C., (CAFW)-Ceramics, seeks to explore the feasibility of producing high value added ceramic materials from biomass.

The principal investigator has a good publication and grant record, and is well qualified to conduct the proposed research. The Principal Investigator is required to maintain support for (1) graduate research assistant at the levels proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1st Year	\$54,670	\$21,000, as specified in the proposal
2nd Year	\$49,671	\$20,000, as specified in the proposal
3 rd Year	\$47,415	\$20,000, as specified in the proposal

Appendix C.2 (continued)

Proposal 011B**Rank: 1**TITLE: *Biological Production of Hydrogen (H₂) from Waste Materials*

INSTITUTION: Louisiana State University - Baton Rouge

PRINCIPAL INVESTIGATOR: William M. Moe, Ph.D.; Fred A. Rainey, Ph.D.

COMMENTS: In recent years, use of hydrogen gas (H₂) in energy-efficient fuel cells has been proposed as a replacement for traditional liquid fuels and combustion processes. Such an approach is motivated by a desire to limit emission of greenhouse gases and other pollutants. Transformation to a hydrogen-based energy economy, however, requires an abundant, low-cost source of hydrogen gas. Currently, the vast majority of hydrogen used as an industrial feedstock or as an alternative fuel source is produced using non-renewable resources. The ultimate goal of the proposed research is to expand fundamental understanding and practical application of biological systems for producing hydrogen gas (H₂) from various waste materials, particularly carbohydrate-rich wastewaters produced in the sugarcane processing industry.

This proposal was well written and the work plan appears sound. The proposal contained interesting basic and applied microbiology with significant support from industrial partner Total Solid Solutions, a Louisiana-based company located in Monroe, LA. The letter of support from the industrial partner pledged continued research collaboration by developing and fabricating the system necessary for pilot-scale demonstration of the process at an industrial facility during year (3) of the project. The use of the system (including piping, pumps, reactor, off-gas collection, etc.) will be provided as an "in-kind match" although no value was included in the letter of project budget. The Principal Investigators have a good publication record and grant history. The principal investigator is required to maintain support for (1) graduate research assistant at the levels proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$54,364	\$10,000 as specified in the proposal
2 nd Year	\$51,068	\$10,000 as specified in the proposal
3 rd Year	\$51,037	\$10,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 019B**Rank: 1**

TITLE: *Automatic Continuous Online Monitoring of Polymerization Reactions and Its Applications to Copolymer and Poly-electrolyte Synthesis in both Homogenous and Emulsion Reactions*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Wayne F. Reed, Ph.D.; Alina M. Alb, Ph.D.

COMMENTS: Polymer production forms a large part of Louisiana's economy and is a titan in the global polymer industry, but astonishingly underactive in polymer R&D. Emulsion polymerization is of increasing importance because it is environmentally friendly, using water in the process and reducing use of organic solvents, it is easier to control heat generation, and reactor solution viscosity remains low as the reaction proceeds, making pumping, storage, transfer, handling, and application of the polymeric products far easier than handling viscous polymer liquids. The scientific goal of this project is to expand the capabilities of Automatic Continuous Online Monitoring of Polymerization reactions (ACOMP). ACOMP is an analytical tool for polymer discovery and development, for optimizing reactions, and ultimately, for controlling industrial scale polymerization reactors. This will yield economic gains due to better products and more efficient use of non-renewable resources, petroleum products, energy, personnel and plant time.

This proposal is a continuation of BoRSF grant LEQSF(2005-06)RD-B-07, funded for one year. The research progress is incremental but continuous. The request for BoRSF salary support appears excessive and has been reduced. However, the principal investigator must maintain support for a graduate research assistant at the level requested in the original proposal for each year of the project. Industrial partners Polymer Laboratories, Strategies et Evaluation des Risques, Arkema, Inc., and Brookhaven Instruments Corporation have pledged to provide substantial in-cash and in-kind support for this project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$47,500	\$115,646 as specified in the proposal
2 nd Year	\$52,250	\$41,361 as specified in the proposal
3 rd Year	\$52,250	\$42,602 as specified in the proposal

Appendix C.2 (continued)

Proposal 028B**Rank: 1**

TITLE: *Enhancement of Mechanical Properties of High Density Polyethylene (HDPE) via Cryo-Compounding with Nanoparticle Reinforcement: HDPE-Calcium Carbonate Polymer Nanocomposite System*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Devesh K. Misra, Ph.D.

COMMENTS: Polymers are considered one of Louisiana's most important contributions to the U.S. economy. It is understood that every hour of every day, a railcar full of polyethylene leaves just one of many polyethylene plants that account for 40% of beverage containers. There is, however, a large gap between producing raw materials and manufacturing high-valued finished products. The proposed research is targeted at the polymer industry in the state. From a technological perspective, the reinforcement of polymers with calcium carbonate of nanometer size will result in significant enhancement in properties compared to un-reinforced polymers. A high strength-toughness combination achieved in polymer nanocomposites will also enable significant reduction in wall thickness of products and thereby result in reduced weight. The results of the proposed research will enable all manufacturers and users of the polymers in the state to produce competitive high performance products. This research program is a collaboration between ULL and primary manufacturer (Westlake Polymers, Lake Charles, LA), in cooperation with Air Force Research Laboratory, (AFRL), WPAFB, Ohio.

The work plan is straightforward and appears to have a reasonable chance of success. The principal investigator is required to submit a letter from the U.S. Air Force signed on USAF stationery stating their intent to participate in the research project and detail their level of support. Additionally, the principal investigator must limit BoRSF travel support to \$1,000/year and maintain support for (1) graduate research assistant at the levels proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$64,600	\$45,000 as specified in the proposal
2 nd Year	\$65,550	\$45,000 as specified in the proposal
3 rd Year	\$66,500	\$45,000 as specified in the proposal

Appendix C.2 (continued)

Proposal 012B**Rank: 1**

TITLE: *Development of Effective and Efficient Methods for Joining Composite Pipes*

INSTITUTION: Louisiana State University - Baton Rouge

PRINCIPAL INVESTIGATOR: Su-Seng Pang, Ph.D.; M.A. Wahab, Ph.D.; Jinqun Cheng, Ph.D.; Guoqiang Li, Ph.D.

COMMENTS: Louisiana's oil & gas industries are the backbone of the state's economy, with an estimated \$93 billion impact in 2001. Including offshore operations, Louisiana is the nation's #1 oil producing state and #2 natural gas producing state, accounting for 27% of the nation's daily oil and natural gas production. Currently, Louisiana has about 25,000 miles of pipelines moving natural gas, crude oil and refined chemicals. The majority of the pipelines are made of ferrous metals, with only a small portion of corrosion-resistant fiber reinforced polymer (FRP) composites. This is because of the lack of effective and efficient joining methods, especially for larger diameter FRP pipes due to the increased stress and difficulty in installation. The objective of this project is to develop a smart composite joint for joining FRP pipes without the restriction of diameters. The industrial partner, SMI Companies, located in Franklin, Louisiana, has agreed to provide \$30,000 in cash and \$45,000 in in-kind support that includes raw material and the labor of engineers and technicians. Additionally, industrial partner EDP Fiber Group, located in Salt Lake City, Utah, and their corporate partner EDO Specialty Plastics (ESP), located in Baton Rouge, has agreed to provide the requested technical assistance to the research group over the 3-year period.

The proposal was generally well written but the proposed work plan did not appear logical. Fabrication of a coupler is scheduled prior to analytical modeling. Since modeling is a part of the design process rather than the testing process, this aspect of the proposal should be reconsidered. Additionally, the principal investigator has good publication and grant history. The principal investigator is required to maintain support for (2) graduate research assistants at the levels proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$71,016	\$25,000 as specified in the proposal
2 nd Year	\$66,500	\$25,000 as specified in the proposal
3 rd Year	\$57,000	\$25,000 as specified in the proposal

Appendix C.2 (continued)

Alternate - To Be Funded Only if a Higher-Ranked Applicant Declines an Award

Proposal 018B

Rank: 1

TITLE: *Emulsion/Demulsification and Aeration/Foaming in Lubricants*

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Kyriakos Papadopoulos, Ph.D.;

COMMENTS: Lubricant manufacturing is a big business in Louisiana, with several chemical companies heavily/chiefly involved in the production of lubricant base oils and lubricant additive feedstocks. Air entrainment in engine lubricant oils during engine operation compromises engine function, results in loss of lubricant as foam, and creates environmental waste. Similar problems are caused by the formation of aqueous droplets in the lubricant in the form of water-in-oil emulsions, which are often acidic, thus producing the additional undesirable effect of engine corrosion. The proposed research seek to find and become able to manipulate determining parameters in the phenomena of emulsification/demulsification and foaming/air entrainment that govern lubricant performance at varying temperatures. The principal investigator will use a novel method of microscopy (capillary video-microscopy) at temperatures of interest. The industrial partner (Afton Chemical of Richmond, Virginia) has agreed to provide a cash commitment of \$35,000 over the (3) year project.

The principal investigator has a modest publication and current research record. Nevertheless, the principal investigator is well qualified to conduct the proposed research. A better description of what the research should generate is needed. If funded, the principal investigator is required to maintain support for (1) graduate research assistant at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$40,000	\$12,000 as specified in the proposal
2 nd Year	\$40,000	\$12,000 as specified in the proposal
3 rd Year	\$40,000	\$11,000 as specified in the proposal

Appendix C.2 (continued)

Alternate - To Be Funded Only if one or more Higher-Ranked Applicants Declines an Award**Proposal 039B****Rank: 1**TITLE: *Magnetic Nanocarriers for Nanomedicine Applications*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Weilie Zhou, Ph.D.; Zeev Rosenweig, Ph.D.

COMMENTS: Nanomedicine is emerging as one of the most important subdisciplines under the nanotechnology umbrella. Since nanocarriers are essential for drug delivery, the fabrication of biocompatible and non-toxic nanocarriers is very crucial for the practical applications of nanomedicine. Pure magnetic particles are not very useful in practical applications due to easy aggregation, less stabilization of their structures and magnetic properties, and rapid bio-degradation. The proposed research seek to overcome these limitations by developing magnetically-directed and structured controlled nanocarriers for drug loading and releasing. The industrial partner NanoPrism Technologies, Inc., a newly established local company has agreed to provide supplies in support of the project with an estimated value of \$9,000/year.

If funded, the principal investigators must expand their research team to include a member in biology or health related areas. They must also submit a proposal by year 2 to a federal agency to maintain BoRSF funding. Additionally, the principal investigators are required to maintain support for (1) graduate research assistant at the level proposed in the original budget in all three years of the project.

As a condition of funding, the types and amounts of the institutional and external matching commitments stated in the proposal should be maintained in full. Funding is contingent upon receipt by the Board no later than June 30, 2007 of updated documentation showing support at the levels indicated in the original proposal and as required in Appendix C.1.

BUDGET	BORSF	EXTERNAL
1 st Year	\$59,539	\$9,000 as specified in the proposal
2 nd Year	\$57,829	\$9,000 as specified in the proposal
3 rd Year	\$55,891	\$9,000 as specified in the proposal

APPENDIX C.3

COMMENTS ON PROPOSALS RANKED PRIORITY I BY THE SUBJECT AREA PANELS AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING

Note: These proposals are not listed in rank order of merit.

Proposal 020B

TITLE: *Network Development and Deployment for Katrina-like Disaster Relief Applications*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATORS: Magdy Bayoumi, Ph.D.; Mohamed Elgamel, Ph.D.;
Ashok Kumar, Ph.D.

COMMENTS: During the recent disaster which hit the Gulf Coast it became clear that a key ingredient missing from emergency rescue operations is a robust reliable communication. Additionally, in the wake of the Tsunami that hit Asia, emergency communication systems were successfully deployed by INTEL in Indonesia based on the Wi-Max standard IEEE 802.16. However, this technology is currently supported by only laptops and PDAs, to which the common person usually does not have access. This project proposes to set up a wireless, ad-hoc self-organizing network for emergency communication, akin to the existing 911 system, but using emerging wireless technologies and standards in a cost-effective and interoperable manner. The project plans to rely on Lafayette's upcoming city and parish wide broadband services (Wi-Max), similar to those a select few cities already have (Spokane, WA; Cleveland, OH; Penn State campus; etc.). The research also proposes the development of an emergency response chip (ER-Chip) akin to Federal Communications Commission's (FCC's) V-chip for TV broadcasts, to be embedded in any portable embedded device in the future (e.g., cell phones, PDAs, laptops, and pagers). These chips, operating only on an FCC designated emergency frequency (like the 911 line), will be able to send out emergency messages/beacons in times of emergency on that public safety frequency.

Although, this research proposal was ranked highly by the subject area reviewers the proposal lacked a detailed work plan and was written as a series of potential applications. Since the proposed technology is being addressed on many global and national fronts, consequently it has questionable economic value to Louisiana. The budget was not well conceived or justified. Additionally, industry participation was not clearly demonstrated. The proposal referenced three industrial partners, Service Communication of Acadiana, Inc., (SCA), Network USA, and Emerging Memory Technology (EMT); however, only one letter of support (SCA) was provided. These shortcomings, combined with a lack of industry support in year (2) and year (3) severely weakened this proposal.

Appendix C.3 (continued)

Proposal 025B

TITLE: *Developing and Micromanufacturing Application-Specific Acoustic Sensors*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Mohammad R. Madani, Ph.D.; Hongyi Wu, Ph.D.

COMMENTS: Sand production exists in oil/gas piping when fields have relatively low formation strength, leading to shear stresses which act on the rock surrounding the perforation cavities or wellbore exceeding the rock strength. Since sand in production piping results in not only substantial removal costs and maintenance expenditures but also possible equipment erosion, early detection of sand is absolutely critical for production optimization and cost reduction. Quantitative sand monitoring is also essential in verifying the effectiveness of sand control procedures and in providing a key input parameter for erosion and sand settling predictions. General purpose acoustic sensors available commercially may be applied to different applications, but they often exhibit three shortcomings: (1) steep price tags; (2) sub-optimized response performance for a given application; and (3) high operational power supplies (of typically 24V DC). This project targets developing and micromanufacturing application-specific acoustic sensors with high response performance and low costs.

The goals/objective of the research proposal are not specific and appear to be pattern recognition with more emphasis given to the sensor production. The fact that each system/implementation probably has unique signatures is not discussed; only one bench demonstration is cited. The budget appears inflated and the need for (2) graduate research assistants and (3) principal investigators was not well justified.

APPENDIX C.4

SUMMARIES OF MERITORIOUS PROPOSALS NOT RECOMMENDED FOR FUNDING AT THIS TIME (PRIORITY TWO)

Appendix C.4

Proposal 003B

TITLE: *Optimization of Sugar Mill Crystallization in Vacuum Pans*

INSTITUTION: Louisiana State University Agricultural Center

PRINCIPAL INVESTIGATORS: Dr. Peter Rein, Ph.D.; Dr. Sumanta Acharya, Ph.D.

COMMENTS: The sugar industry in Louisiana is the second largest domestic producer after Florida, and ranks third among all the agricultural industries in the state. It produces about 1.5 million tons of raw sugar per year, valued at \$640 million per year. The sugar industry, however, has been faced with increases in processing costs and economic pressures of lower sugar prices. It is therefore important to reduce costs of production to remain economically viable. This project aims to improve the crystallization process of sugar in vacuum pans by applying experimental and computational fluid mechanics. This proposal is a continuation of the funded research of LEQSF(2004-07)-RD-B-01. Although the work is worthwhile, it appears the request is for work proposed earlier and with not much innovation. Additionally, industrial support is modest at best, and it is believed that if this project were likely to have an economic impact for the state of Louisiana there would be more industrial support by now. The research progress is not likely to move out of the modeling stage.

Proposal 016B

TITLE: *Controlling as Cast Widmanstatten Structure, and Precipitation Phases in Carbon Steel Casting*

INSTITUTION: Southeastern Louisiana University

PRINCIPAL INVESTIGATORS: Anthony D. Blakeney, M.S.; James S. Stutts, M.S.

COMMENTS: Amite Foundry and Machine, Inc., located in Amite, LA is currently producing a number of different castings of various compositions and sizes for companies such as Caterpillar Industries, Northrop Grumman, Metso, and the United States Navy. This industrial partner is seeking to improve ways to perform welding operations on steel castings, some of which are as large as 60,000 lbs. The purpose of this project is to investigate heat-treating operations such as annealing or normalizing immediately following the break out of a casting and prior to welding (surfacing or repair). It is proposed that heat-treating the casting prior to welding or repairing may control as cast Widmanstatten Structure and help to reduce or eliminate cracking in and/or around the weldment. There is much knowledge available on the Heat Affected Zone (HAZ) associated with welds on cast structures. The research plan was not well written, and did not appear to have addressed earlier research conducted in this area. The work proposed was basic material testing, with limited information provided

regarding heat treatment methods.

Appendix C.4 (continued)

Proposal 035B

TITLE: *Diagnostic Applications of Luminescent Quantum Dots*

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATORS: Zeev Rosenweig, Ph.D.

COMMENTS: This proposal is in the field of biomedical technology, which was recently defined by the Louisiana Department of Economic Development (LDED) as a target area for economic development. This proposal focuses on the synthesis of luminescent quantum dots and their application in cancer detection. More specifically, the study proposes to synthesize luminescent quantum dots, functionalize their surface with antibodies that would target metastasis biomarkers on the membrane of cancer cells, and demonstrate their capability to detect low concentration of circulating cancer cells. The Principal Investigator has a good publication record and a reasonable funding history. However, there is no justification for the use of the quantum dot technology in histopathological classification of breast tumors. The use of enzyme immunochemistry is very well accepted and leaves little to be desired. If anything, interest now is high on gene array/expression profiling. Additionally, the current proposal does not build off of the 2002-05 grant (extended to 2007 due to hurricane Katrina) with a similar focus of research.

Proposal 023B

TITLE: *Development of Welding Integrated Shape Deposition and Machining (WISDOM) for On-Demand Production of Dimensionally Accurate and High Surface Quality Metallic Components.*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Suren N. Dwivedi, Ph.D.; Ghanshyam Joshi, Ph.D.;
William E. Mueller, M.B.A.

COMMENTS: The proposed research addresses primary limitations of existing hybrid-layered fabrication methods: component accuracy; and surface quality. A set of exotic alloys—ferrous, nickel and chromium, all having desired mechanical properties will be studied. The ultimate goal of this project is to develop one complete system and repeatable process that integrates welding-based metal deposition and machining for the fabrication of highly accurate components at a rapid rate. This proposal is a resubmission from last year. The proposal lacked focus and would benefit from identifying one clear objective and a work plan aimed at fulfilling that objective. Additionally, the principal investigator and co-principal investigator have failed to demonstrate a consistent publication and funding history beyond the Board of Regents support.

Appendix C.4 (continued)

Proposal 027B

TITLE: *Design and Development of Ultrahigh Strength Microalloyed Steel Immune to Stress-Induced Intergranular Cracking*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Devesh K. Misra, Ph.D.

COMMENTS: Louisiana's economy continues to revolve around its natural resources, oil and gas, in particular. There is an urgent demand from the oil and gas and construction industries in the state for ultrahigh strength steels that are resistant to stress-induced cracking for pipeline and off-shore applications. The demand is coupled with the economic advantages of transporting crude oil and gas through the pipeline network and the need to increase the capacity of the existing pipelines by installation of larger diameter pipes, higher operating pressures, and therefore ultrahigh strength steels. The proposed research seek to develop ultrahigh strength steel by adopting a unique and novel approach that combines the advantages offered by the microalloying element, niobium (for the fine grain size, precipitation hardening, bainitic microstructure and absence of grain boundary segregation), together with an accelerating cooling approach, and optimization of processing conditions (percent rolling deformation, finishing and coiling temperature). This proposal is a resubmission from last year with some new methods. The principal investigator has a reasonable publication record but most of his research support has come from the LA Board of Regents. There appears to be a lot of work (basic research) that does not seem to directly apply to the topic. The stress-induced portion of the work is not addressed until year 3. The need for a research associate and two graduate students was not well justified and the industrial support is all in-kind. This proposal should have provided more data supporting potential success and impact on Louisiana's economy.

Proposal 024B

TITLE: *Completing Development of a Self-Contained Magneto-Rheological Shock Sub with Controllable Damping to Mitigate Failure of Bottom Hole Assembly in Oil and Gas Drilling*

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: M.A. Elsayed, Ph.D.; Cherif Aissi, D.Sc.

COMMENTS: Recent developments in the Middle East increased the focus on alternative forms of energy such as ethanol, solar and hydrogen, among others. However, these forms of energy require further technical as well as infrastructure development. Oil and gas will remain major sources of energy for years to come. Recent

economics makes it viable to drill in deeper, and consequently harder, formations in order to reach untapped deposits. The resulting increase in drilling forces and increased flexibility of the drillstring causes excessive vibrations which result in damage to the bit and Measurement-While-Drilling (MWD) tools. Removing the entire drillstring to replace a broken bit is a costly process. The ultimate goal of this work is to design and market a controllable shock absorber (known as a shock sub) to minimize drillstring vibration, which in turn minimizes the need for bit replacement and directly impacts drilling cost and turnaround time. This proposal is a request for continuation of a previously-funded project. Although, the previous project did generate one patent as well as several publications and proceedings papers, it is disappointing that a partner to support commercialization and provide significant cash support to complete the research has not been identified. All of the industry support is “in-kind” contribution of Mr. David Raymond (Sandia National Laboratory) and Mr. David Sipos (Venteco, Inc.) professional time. Failure to identify a “true” industry partner severely weakened this proposal. Additionally, the original industry partner (Petroleum Solutions, Inc.) is no longer associated with the project, and the economic impact of this research has been minimal.

APPENDIX C.5**GENERAL STATEMENT ON PROPOSALS RANKED
PRIORITY III BY THE FINAL PANEL**

Individual commentaries on proposals ranked Priority III by the final panel are not included in this report. Proposals so ranked were not recommended for funding for at least two of the following reasons (not listed in order of importance):

- \$ Insufficient or inappropriate industrial matching funds were pledged and/or external support documented in the proposal budget was not substantiated by required letters of industrial support
- \$ The industrial partner(s) role in the research collaboration was not provided and/or detailed in the proposal
- \$ Proposals did not have clear objectives and/or research plans lacked scientific rigor or completeness
- \$ The background of a principal investigator was inconsistent with the proposed research and/or the principal investigator had an unusually poor publication record in the proposed area of research
- \$ The proposal showed little or no potential for contributing to the near-term development and diversification of Louisiana's economy
- \$ The proposal did not contain evidence of future commercialization, or it was not clear what economic benefit would be gained from the research
- \$ Budgets were excessive, inadequately justified, or inconsistent with provided budget justifications
- \$ The need for consultants and/or subcontracts was not adequately justified
- \$ Equipment requests were excessive and inappropriate for the research proposed

APPENDIX D

**LIST OF SUBJECT AREA REVIEWERS WHO PARTICIPATED
IN PHASE I & II OF THE REVIEW PROCESS**

Agriculture, Aquaculture, and Animal Science

Dr. Duane L. Johnson, Chair

Associate Professor, New Crops and Forages
Superintendent, Northwestern Agricultural Research Center
Montana State University Agricultural Experiment Station

Dr. Paul Raymer

Department of Crop and Soil Sciences
University of Georgia

Biotechnology and Health Care

Dr. Karl A. Koehler, Chair

Indian Economic Development Corporation
Indian 21st Century Research & Technology Fund

Dr. Leo Herbette

President, Exploria

Chemical Materials and Petroleum Engineering

Dr. Russell D. Ostermann, Chair

Department of Chemical & Petroleum Engineering
University of Kansas

Dr. James Anthony Ritter

Department of Chemical Engineering
University of South Carolina

Appendix D (continued)

Computer and Information Sciences

Dr. John Usher, Chair

Professor, Department of Industrial Engineering
Mississippi State University

Dr. Ali Khosravi Kamrani,

Associate Professor, Department of Industrial Engineering
University of Houston

Mechanical and Materials Engineering

Dr. John Berry, Chair

E. P. Coleman Professor, Department of Mechanical Engineering
Mississippi State University

Dr. Michael Paul Gaus

Chairman, Technology Frontiers

Environmental Science & Technology, and Urban Design

Dr. Sam Feagley, Chair

Professor and State Soil Environmental Specialist
Department of Soil and Crop Science
Texas A & M University

Dr. Steve Stadelman

Environmental Operations Department
Novozymes North America, Incorporated

APPENDIX E

**SUMMARY OF PROPOSALS SUBMITTED TO THE
INDUSTRIAL TIES RESEARCH SUBPROGRAM (ITRS)
FY 2006-07**

**Summary of Proposals Submitted to the
Industrial Ties Research Subprogram(ITRS)
for the FY 2006-2007 Review Cycle**

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
001B-07 SCI	Advanced Microwave Technology for Biodiesel Production from Soybeans and Rice Bran	Louisiana State University And A&M College - Agricultural Center (Biological and Agricultural Engineering);	Dorin Boldor; Chandra S. Theegala; Cristina M. Sabliov; Marybeth Lima;	1	\$ 75,075
				2	\$ 50,121
				3	\$ 50,515
				Total	\$ 175,711
Proposal is a New Request			Does this proposal contain confidential or proprietary information? Yes		
002B-07 SCI	Clarification Technologies for Cane Sugar Processing	Louisiana State University And A&M College - Agricultural Center (Audubon Sugar Institute);	Vadim Kochergin; Lee R. Madsen, II;	1	\$ 92,670
				2	\$ 99,500
				3	\$ 75,091
				Total	\$ 267,261
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

SCI=Scientific or Engineering Discipline
NON=Nonscientific or Nonengineering Discipline

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
003B-07 SCI	Optimization of Sugar Mill Crystallization in Vacuum Pans	Louisiana State University And A&M College - Agricultural Center (Audubon Sugar Institute);	Peter W. Rein; Sumanta Acharya;	1 2 .	\$ 75,000 \$ 71,000 <hr/> \$ 146,000
Proposal is a Continuation Request Previous Contract: LEQSF(2004-07)-RD-B-01			Does this proposal contain confidential or proprietary information? No		
004B-07 SCI	Removal of Color in Sugar Processing for the Direct Production of White Sugar	Louisiana State University And A&M College - Agricultural Center (Audubon Sugar Institute);	Peter W. Rein; Lee R. Madsen, II; Robert M. Strongin;	1 .	\$ 82,000 <hr/> \$ 82,000
Proposal is a Continuation Request Previous Contract: LEQSF(2004-07)-RD-B-02			Does this proposal contain confidential or proprietary information? No		
005B-07 SCI	Development of a Closed-Loop Recycling System for CCA- Treated Wood	Louisiana State University And A&M College - Agricultural Center (Renewable Natural Resources);	Todd F. Shupe; Cheng Piao;	1 2 .	\$ 65,000 \$ 61,000 <hr/> \$ 126,000
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
006B-07 SCI	Cement-bonded Wood/Natural Fiber Composites: Development for Structural Insulation Panel Applications	Louisiana State University And A&M College - Agricultural Center (Renewable Natural Resources);	Qinglin Wu;	1	\$ 87,875
				2	\$ 87,875
				Total	\$ 175,750
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
007B-07 SCI	Cell Signals and Biofilm Control Agents, A Nanomolar Approach	Louisiana State University And A&M College - Baton Rouge (Biological Sciences);	William Doerrler;	1	\$ 66,498
				2	\$ 79,078
				3	\$ 81,404
Total	\$ 226,980				
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
008B-07 SCI	Production of Ceramic Materials from Agricultural Waste	Louisiana State University And A&M College - Baton Rouge (Mechanical Engineering);	Shengmin Guo; Dongmei Cao;	1	\$ 54,670
				2	\$ 52,285
				3	\$ 49,910
Total	\$ 156,865				
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
009B-07 SCI	Ozonesonding Over the Baton Rouge Area During the Summers 2007-2008	Louisiana State University And A&M College - Baton Rouge (Coastal Studies Institute);	S. A. Hsu;	1	\$ 118,818
				2	\$ 99,224
				Total	\$ 218,042
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
010B-07 SCI	Novel Borate Compounds for Wood Protection from Formosan Termites	Louisiana State University And A&M College - Baton Rouge (Biological Sciences); Louisiana State University And A&M College - Agricultural Center;	Roger A. Laine; Gregg Henderson;	1	\$ 80,000
				2	\$ 80,000
				3	\$ 80,000
				Total	\$ 240,000
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
011B-07 SCI	Biological Production of Hydrogen (H ₂) from Waste Materials	Louisiana State University And A&M College - Baton Rouge (Civil and Environmental Engineering);	William M. Moe; Fred A. Rainey;	1	\$ 57,225
				2	\$ 53,756
				3	\$ 53,723
				Total	\$ 164,704
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
012B-07 SCI	Development of Effective and Efficient Methods for Joining Composite Pipes	Louisiana State University And A&M College - Baton Rouge (Mechanical Engineering);	Su-Seng Pang; Guoqiang Li; Jinquan Cheng; M. A. Wahab;	1	\$ 80,000
				2	\$ 70,000
				3	\$ 60,000
				Total	\$ 210,000
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
013B-07 SCI	University Industry Partnership in Bioenergy for the South	Louisiana State University And A&M College - Baton Rouge (Center for Energy Studies);	Allan Pulsipher; Daniel Thomas; David Dismukes; Kalliat T. Valsaraj;	1	\$ 148,125
				2	\$ 94,250
				3	\$ 94,250
				Total	\$ 336,625
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
014B-07 NON	Improving Oral and Written Communication Skills in Louisiana's Workforce	Northwestern State University (Language and Communication);	Lisa Abney;	1	\$ 8,400
				2	\$ 11,900
				3	\$ 11,900
				Total	\$ 32,200
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
015B-07 SCI	The Effects of Added Horizontal Substrate on Production of Red Swamp Crawfish	Northwestern State University (Aquaculture Research Center);	Juliette Delabbio;	1	\$ 149,720
				2	\$ 71,560
				3	\$ 50,000
				Total	\$ 271,280
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
016B-07 SCI	Controlling as Cast Widmanstatten Structure, and Precipitation Phases in Carbon Steel Castings	Southeastern Louisiana University (Computer Science and Industrial Technology);	Anthony D. Blakeney; James S. Stutts;	1	\$ 114,666
				2	\$ 70,239
				3	\$ 65,383
				Total	\$ 250,288
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
017B-07 SCI	Advancements in Autonomous Vehicles Technology	Southeastern Louisiana University (Computer Science and Industrial Technology);	Cris Koutsougeras; Mike Asoodeh; Pat McDowell;	1	\$ 69,751
				2	\$ 71,712
				3	\$ 73,767
				Total	\$ 215,230
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
018B-07 SCI	Emulsion/Demulsification and Aeration/Foaming in Lubricants	Tulane University (Chemical & Biomolecular);	Kyriakos Papadopoulos;	1	\$ 45,563
				2	\$ 44,646
				3	\$ 46,301
				Total	\$ 136,510
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
019B-07 SCI	Automatic Continuous Online Monitoring of Polymerization Reactions and Its Applications to Copolymer and Polyelectrolyte Synthesis in Both Homogeneous and Emulsion Reactions	Tulane University (Physics);	Wayne F. Reed; Alina M. Alb;	1	\$ 80,923
				2	\$ 83,350
				3	\$ 85,850
				Total	\$ 250,123
Proposal is a Continuation Request Previous Contract: LEQSF(2006-07)-RD-B-07			Does this proposal contain confidential or proprietary information? No		
020B-07 SCI	Network Development and Deployment for Katrina-like Disaster Relief Applications	University of Louisiana at Lafayette (Center for Advanced Computer Studies);	Magdy Bayoumi; Ashok Kumar; Mohamed Elgamel;	1	\$ 129,980
				2	\$ 96,318
				3	\$ 96,318
				Total	\$ 322,616
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
021B-07 SCI	Wireless Data Acquisition for Oil and Gas Production Testing Systems	University of Louisiana at Lafayette (Center for Advanced Computer Studies);	Magdy Bayoumi; Mohamed Elgamel; Nian-Feng Tzeng;	1	\$ 96,208
				2	\$ 80,208
				Total	\$ 176,416
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
022B-07 SCI	Development and Optimization of Molecular Ecology Techniques for Oil Industry-Related Applications	University of Louisiana at Lafayette (Biology);	Andrei Chistoserdov; Vanessa Madrid;	1	\$ 120,908
				2	\$ 93,784
				3	\$ 96,774
				Total	\$ 311,466
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
023B-07 SCI	Development of Welding Intergrated Shape Deposition and Machining (WISDOM) for On-Demand Production of Dimensionally Accurate and High Surface Quality Metallic Components	University of Louisiana at Lafayette (Mechanical Engineering); Southern University and A&M College at Baton Rouge;	Suren N. Dwivedi; Ghanshyam Joshi; William E. Mueller;	1	\$ 71,415
				2	\$ 73,660
				3	\$ 61,031
				Total	\$ 206,106
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
024B-07 SCI	Completing Development of a Self-Contained Magneto-Rheological Shock Sub with Controllable Damping to Mitigate Failure of Bottom Hole Assembly in Oil and Gas Drilling	University of Louisiana at Lafayette (Mechanical Engineering);	M. A. Elsayed; Cherif Aissi;	1	\$ 59,831
				2	\$ 53,106
				3	\$ 54,430
				Total	\$ 167,367
Proposal is a Continuation Request Previous Contract: LEQSF(2004-07)-RD-B-10			Does this proposal contain confidential or proprietary information? No		
025B-07 SCI	Developing and Micromanufacturing Application-Specific Acoustic Sensors	University of Louisiana at Lafayette (Electrical & Computer Engineering);	Mohammad R. Madani; Hongyi Wu; Nian-Feng Tzeng;	1	\$ 140,022
				2	\$ 98,000
				3	\$ 99,978
				Total	\$ 338,000
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
026B-07 SCI	Research in Energy Efficient Construction Processes for the Housing Industry Implementing Fuzzy Logic Controller Based Energy Management System	University of Louisiana at Lafayette (Industrial Technology);	G. H. Massiha; Herbert A. Hebert; Ted Kozman;	1	\$ 72,844
				2	\$ 69,018
				3	\$ 70,759
				Total	\$ 212,621
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
027B-07 SCI	Design and Development of Ultra-High Strength Microalloyed Steels Immune to Stress-Induced Intergranular Cracking	University of Louisiana at Lafayette (Chemical Engineering);	Devesh K. Misra;	1	\$ 76,321
				2	\$ 77,382
				3	\$ 78,498
				Total	\$ 232,201
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
028B-07 SCI	Enhancement of Mechanical Properties of High Density Polyethylene (HDPE) via Cryo-Compounding with Nanoparticle Reinforcement: HDPE-Calcium Carbonate Polymer Nanocomposite System	University of Louisiana at Lafayette (Chemical Engineering);	Devesh K. Misra;	1	\$ 68,321
				2	\$ 69,382
				3	\$ 70,498
				Total	\$ 208,201
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
029B-07 SCI	Combined Heat and Power (CHP) Development and Demonstration Project	University of Louisiana at Lafayette (Mechanical Engineering);	William E. Simon; Gongtao Wang; Terrence Chambers;	1	\$ 107,871
				2	\$ 79,159
				3	\$ 56,659
				Total	\$ 243,689
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
030B-07 SCI	Analysis and Optimization for Manufacturing Drill String Centralizer	University of Louisiana at Lafayette (Mechanical Engineering);	Gongtao Wang; William J. Emblom;	1	\$ 57,433
				2	\$ 42,726
				3	\$ 11,341
				Total	\$ 111,500
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
031B-07 SCI	Development of Novel Feedstocks for Supporting Lipid Based Chemical Production in Louisiana	University of Louisiana at Lafayette (Chemical Engineering);	Mark E. Zappi; Rakesh Bajpai;	1	\$ 72,152
				2	\$ 79,652
				3	\$ 72,152
				Total	\$ 223,956
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
032B-07 SCI	An Experimental and Analytical Study of Coupled Instabilities (Acoustic, Hydrodynamic, and Combustion) in Hybrid Propulsion Systems	University of New Orleans (Mechanical Engineering);	Kazim M. Akyuzlu;	1	\$ 80,656
				2	\$ 72,656
				3	\$ 68,406
				Total	\$ 221,718
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
033B-07 SCI	A Non-Intrusive Real-Time Human Fatigue Monitoring System	University of New Orleans (Electrical Engineering);	Abdulrahman Alsamman;	1	\$ 39,725
				2	\$ 33,425
				Total	\$ 73,150
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
034B-07 SCI	Collaborative Research and Development on Multi-Sensor Surveillance Systems	University of New Orleans (Electrical Engineering);	X. Rong Li; Huimin Chen; Vesselin P. Jilkov;	1	\$ 91,299
				2	\$ 93,773
				3	\$ 96,784
Total	\$ 281,856				
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
035B-07 SCI	Diagnostic Applications of Luminescent Quantum Dots	University of New Orleans (Chemistry);	Zeev Rosenzweig;	1	\$ 89,325
				2	\$ 64,325
				3	\$ 64,325
Total	\$ 217,975				
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
036B-07 SCI	Preserving Half-Metallicity on the Surface of Fe ₃ O ₄ for Spintronic Applications	University of New Orleans (Physics);	Jinke Tang;	1	\$ 79,350
				2	\$ 79,350
				3	\$ 79,350
				.	
				Total	\$ 238,050
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
037B-07 SCI	Investigation of the Damage Behavior of Advanced Composite Material Systems	University of New Orleans (Mechanical Engineering);	Melody Arthur Verges; Paul J. Schilling;	1	\$ 61,251
				2	\$ 58,400
				3	\$ 59,998
				.	
				Total	\$ 179,649
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		
038B-07 SCI	Development of the High-Pressure, High-Volume TurboPiston Pump	University of New Orleans (Energy Conversion & Conservation Center);	Ting Wang;	1	\$ 60,000
				2	\$ 60,000
				3	\$ 60,000
				.	
				Total	\$ 180,000
Proposal is a New Request			Does this proposal contain confidential or proprietary information? No		

Prop# Discipline	Title	Institution/Department	Principal Investigator(s)	Duration (Years)	BoRSF Money Requested
039B-07 SCI	Magnetic Nanocarriers for Nanomedicine Applications	University of New Orleans (Advanced Materials Research Institute);	Weilie Zhou; Zeev Rosenzweig;	1	\$ 62,673
				2	\$ 60,873
				3	\$ 58,833
				Total	\$ 182,379

Proposal is a **New Request**

Does this proposal contain confidential
or proprietary information? **No**

Summary of Proposals Submitted to the Industrial Ties Research Subprogram(ITRS) for the FY 2006-2007 Review Cycle			
Total Number of Proposals Submitted	Total First-Year Funds Requested	Total Funds Requested	Total First-Year Funds Available
39	\$ 3,189,564	\$ 8,010,485	\$